Entrenchment effects in language change

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1 Introduction

While the concept of entrenchment has definitely made something of a splash in historical linguistics, the field never was a complete stranger to it. Take simple changes like the semantic divergence between English *busy* and its derivative *business*, which now means 'economic activity' rather than 'the state of being busy', or between French *maintenir* 'hold on to' and what used to be its present participle, *maintenant*, today meaning 'now'. Or take the formal contraction of the Dutch phrase (*het*) *mach schien* '(it) can happen' to the adverb *misschien* 'maybe', or of English *God be with ye* to *goodbye*. It does not take much to realize that such changes must involve something like redundant storage or chunking. What is new, however, is that the processes involved in these changes are no longer deemed curiosities, observed sporadically in the lexicon but alien to grammar proper – instead, they are now thought to be constitutive of the very texture of grammar. What is also new is that these and other changes have been integrated into a growing body of evidence, supporting a more unified theory of the relation between usage and linguistic knowledge.

Entrenchment refers to the automation process by which linguistic structures achieve "unit status" (Langacker 1987: 57). As a structure gets entrenched, it becomes part of a speaker's linguistic repertoire, as a ready-made pattern that can be employed largely automatically, with no effort going into creative assembly. Entrenchment is dependent on usage, increasing through repeated use, and decreasing through non-use (Langacker 1987: 59). It can affect any dimension or level of linguistic structure (Langacker 1987: 57-8). Prefabs such as *I see what you mean* or *the thing is that* have unit status, to the extent that they are ready-made (parts of) syntagms. But any single word is also a unit, being an automated pairing of a phonological form to a conceptual structure. And so are the individual sounds of a language, each of which is an automated sequence of articulatory movements. Finally, there is no strict dichotomy between units and nonunits (Langacker 1987: 59). Entrenchment is gradual. Even among established units, degrees of entrenchment vary, and will be reflected in variable ease of activation (Langacker 1991: 48).

Its gradualness gives entrenchment an obvious diachronic dimension, but its role in historical linguistic theory goes much further. The goal of this chapter is to give an overview of the relations between the Cognitive Linguistics concept of entrenchment and the field of Historical Linguistics. At its best, entrenchment explains some phenomena that have always embarrassed historical linguists.

For one thing, it brings some measure of predictability to analogical levelling (Bybee & Slobin 1982). Historical linguists in turn have been contributing important evidence of the role of entrenchment in grammar. For instance, they have extensively documented the relation between changing usage frequency and phonetic reduction (Hooper 1976; Krug 1998). The theoretical cross-fertilization and resulting insights certainly justify enthusiasm. At the same time, there is no denying that there are still several issues to be resolved. Explanations based on entrenchment often seem prone to circularity; how entrenchment leads to formal reduction or semantic change is still not fully understood; it is still unclear how the gradual character of entrenchment relates to the discreteness typically associated with syntax; and entrenchment of paradigmatic relations is still much underexplored. Those issues, too, are to be discussed in this chapter.

The following overview sticks to the conceptual framework proposed by Schmid (this volume), addressing the effects of entrenchment on pragmatic, symbolic, syntagmatic and paradigmatic relations in grammar. These are the relations of a form to, respectively, its extra-linguistic context, the meaning it encodes, the other forms with which it co-occurs in a syntactic sequence, and other forms that could take its place in a syntactic sequence. As such, the approach is form-centred, ignoring other conceivable linguistic relations. Nonetheless, it foregrounds a substantial diversity of relation types.

Given this diversity, the effects of entrenchment on language change appear disparate and paradoxical. Sometimes entrenchment is a conservative force; sometimes it lies at the basis of grammatical innovation. To find some unity in disparity, it helps to think of entrenchment as endowing a relation with a selectional advantage in usage. Arguably, it is this advantage over alternative choices that makes entrenched relations both conservative and prone to extension into new usage contexts. On the one hand, alternative choices are less likely to encroach on a relation that is firmly entrenched. On the other hand, entrenchment works in tandem with what Langacker (1987: 71) has termed 'partial sanction'. In verbalization, language users may opt for coding solutions that deviate from convention. They then select an expression whose specifications only partly correspond to the conceptualization to be coded. This is what leads to innovation. The link to entrenchment is that language users are more likely to choose a deviant coding solution if that solution is ready at hand.

Before starting off on the detailed discussion, a few preliminary notes are in order. First, in what follows I will take discourse frequency as a proxy to entrenchment. This is ostensibly naive (xxx this volume xxx), but it will do for the purpose of this chapter. Second, in much of what follows, the elephant in the room is grammaticalization. Grammaticalization is the process by which a lexical item adopts a grammatical function and undergoes concomitant changes to its form and syntactic behaviour (Lehmann 1985; Hopper & Traugott 2003). For example, English *go* is a verb marking spatial motion, but in the pattern *be going to* it developed into a future auxiliary, with phonetically reduced variant *gonna* and some new syntactic properties such as transparency to passivization (Krug 2000).

Grammaticalizing items tend to undergo dramatic increases in their frequency, and this is what makes them so interesting in connection to entrenchment. Indeed, many of the changes that come with grammaticalization have been explained as entrenchment effects. I will not discuss grammaticalization as such here, but an occasional mention of the term is inevitable, and many of the examples that come up in the body of this paper are instances of grammaticalization.

2 Pragmatic association

Pragmatic relations become entrenched when language users store information about the contexts in which linguistic expressions are used. That this possibility exists appears uncontroversial. In fact, it is presupposed by much of sociolinguistic theory. In addition, entrenchment of pragmatic relations also offers a plausible explanation for a major body of semantic changes.

2.1 *The social dynamics of change*

Language users register who uses specific expressions and under what conditions. Speakers' ability to style-shift depends on this, as do the social dynamics of change (Labov 2001: 517-8). The simplest illustration is changes from above, in which language users more or less consciously adopt a prestige form (Labov 1994: 78). For example, Weerman et al. (2013) show that while Dutch had already largely lost its inflectional case marking system, the genitive was revitalized in the 17th century and made a comeback particularly in highly formal writing. They argue that writers at the time attached social prestige to genitive forms.

As another example, D'Arcy & Tagliamonte (2010) discuss the social factors underlying the use of English *wh*-relatives in relation to *that* and zero (as in *a friend who*/*that*/*Ø you can trust*). Of the three variables, the *wh*-relatives are the relative newcomer, having over several centuries spread from formal writing into careful speech. The development took place with the persistent backing of prescriptive grammarians, and it appears that even to this day the choice between relative markers is socially indexical. Focusing on the present-day use of the variables in the city of Toronto, D'Arcy & Tagliamonte find (among other things) that the restrictive subject-relative pronoun *who* is comparatively favoured by middle-aged and more educated women and professionals. In other words, it has the typical social patterning of a prestige form. Indeed, they find that speakers adapt their usage in light of this, with speakers making "subtle alternations in variant use in response to the social makeup of the discourse situation" (Ibid.: 400). Specifically, the educated women in the study favour *who* even stronger when speaking to other educated women. This presents straightforward evidence that through their association with specific contexts of use expressions pick up social meaning.

2.2 *Pragmatic strengthening*

A different type of change involving entrenchment of pragmatic relations is illustrated in (1). In the example, the Mandarin adverbial *mǎ shàng* (马上) is used meaning 'immediately'. But in fact the expression is a combination of the noun *mǎ* 'horse' and *shàng* 'on', literally meaning 'by horse'.

(1) dào jiā zhī hòu wǒ *mǎ shàng* gěi nǐ dǎ diàn huà
arrive home after I immediately to you make a phone call
'After I come home, I'll give you a call immediately.'

The connection between the two senses of *mǎ shàng* is straightforward enough. There was a time when a horse would bring someone to their destination with the least possible delay. Even so, for the meaning of *mǎ shàng* to change from 'by horse' to 'immediately' takes more than language users' inference that someone coming by horse is probably coming soon. The inference must also be remembered, and the memory trace must be so strong that the expression's inferred meaning can supersede the original meaning. The former process involves entrenchment of a pragmatic association; the latter involves partial sanction. That is, at some point a language user who wants to verbalize the meaning 'immediately' must opt for an expression meaning 'by horse', despite its inaptness if no actual horse is being talked about.

The process by which pragmatic inferences become semanticized has been labelled 'pragmatic strengthening' by Traugott & König (1991). Although there is still discussion about the types of pragmatic inference most typically involved (Mosegaard-Hansen & Waltereit 2006), there is no questioning the pervasiveness of the general process in all domains of grammar (Schwenter & Traugott 1995; Traugott & Dasher 2002; Hopper & Traugott 2003). For instance, pragmatic strengthening is also seen at work in the English conjunction *while* (Traugott & König 1991: 199-201). In (2), *while* marks simultaneity between two situations.

(2) Đet lastede þa .xix. wintre *wile* Stephne was king. (1154, OED)
'That lasted then nineteen winters during the time when Stephen was king.'

In (3) its meaning is the same, but its use comes with a side-effect. A language user need not mark two situations as simultaneous, even if they are. So, if s/he chooses to do so, it is because the simultaneity is somehow worth drawing attention to. Often, that is when the expectations raised by one

situation conflict with the simultaneous occurrence of the other situation. In (3), for instance, it is remarkable for people to escape even as they are being hunted.

(3) *While* men hunted after hem þai han a-wai schaped. (c1350, OED)
'While men were hunting after them, they escaped.'

Once *while* gets associated with contrastive contexts, it is a small step for *while* to actually come to express concessive or adversative meaning. This is illustrated in (4), where adversative meaning has superseded the original temporal meaning.

(4) *While* Adorno confines this category to "serious" music, Paddison points out that there seems no reason why it could not include a good deal of avant-garde jazz [...] (1993, BNC).

The occurrence of pragmatic strengthening demonstrates the permeability of the pragmatics-semantics distinction. Language users store information about the contexts in which expressions are used. If an expression is repeatedly linked to the same contextually inferred meaning, the inferred meaning can become coded meaning, shortcutting the inferential process.

3 Symbolic association

In pragmatic strengthening, new symbolic relations derive from originally pragmatic relations. But entrenchment has also been argued to work its effects on symbolic relations directly. Specifically, entrenchment has been linked to semantic generalization. In theory, the connection is very reasonable. Easy availability of a strongly entrenched symbolic relation facilitates its over-application through partial sanction. The result must be semantic change. However, the actual historical data do not easily comply with the theory. One problem is methodological. The connection between entrenchment and semantic change is difficult to demonstrate in real changes. This is because the frequency increases by which growing entrenchment is to be diagnosed may just as well be the result of semantic change as its cause. In addition, there are some theoretical worries, relating to the scope and nature of the phenomenon, as well as to the precise diachronic mechanism involved. It is on these theoretical issues that the following discussion primarily focuses.

3.1 *Bleaching*

Semantic generalization – often referred to as bleaching – is a process by which an expression gradually expands its potential denotation while giving up its semantic specificity (Lehmann 1985). Bybee explicitly links bleaching to frequency, arguing that "the mechanism behind bleaching is habituation: a stimulus loses its impact if it occurs very frequently" (2003: 605). She illustrates this with the semantic change in English *can* from 'mental ability' via generalized 'ability' to 'root possibility', where each step corresponds to the loss of a specific semantic feature. There are several problems with this example, however. For a start, different senses of *can* co-occur synchronically. While the changes Bybee describes took place in the Early Modern period, Coates (1983: 85-102), describing Present-day English, still distinguishes the 'ability' sense (5a) from 'root possibility' (5b). If *can* simply lost semantic specifications, the verb's older more specific sense would have to have been subsumed under the newer generalized sense. The verb would not be felt by speakers to be polysemous.

(5) a. "I *can* walk far, mister Brook. I *can* walk all the way to the mine." (Coates 1983: 89)
b. We believe that solutions *can* be found which will prove satisfactory (Ibid.: 96)

Moreover, loss of semantic specifications is inconsistent with the appearance of the arguably more specific 'permission' sense in *can*, as illustrated in (6).

(6) You *can* start the revels now (Ibid.: 88)

Finally, there is a viable alternative explanation for the semantic changes in *can*. The changes could easily have arisen through pragmatic strengthening (see section 2).

As it turns out, it is difficult to find truly convincing examples of bleaching through frequency. An example that is often cited comes from Haspelmath's (1991) study on infinitive markers. These tend to follow a cross-linguistically recurrent pathway of change, starting out as markers of infinitival purpose adjuncts to end up as more or less meaningless complementizers. The change can be illustrated by the Dutch infinitive marker *om*. Deriving from a preposition meaning 'for the sake of', it was optionally used in Middle Dutch to introduce infinitival purpose clauses, as in (7a). Present-day Dutch, however, allows uses without the original purpose meaning, as shown by (7b).

(7) a. [Die duvel] quam vor hare in mans gedane, *omme* quaetheit
the devil came before her in man's guise in order evil
haer te lecghene ane (1393-1402, MNW)
her to put to
'The devil came before her in human guise, in order to propose to her evil doings.'

b. In het begin vinden die uitwijkende gasten het vervelend *om*
in the beginning find these redirected guests it annoying OM
hier in het bos te worden ondergebracht. (2002, TNC)
here in the woods to be accommodated.
'At first, these redirected guests find it annoying (*in order) to be accommodated here in the woods.'

But this example is not fully convincing, either. Dutch *om*-infinitives actually retain their purpose meaning in the context in which they were originally used, i.e. as adjuncts, as shown in (8).

(8) Wat moet er gebeuren *om* herhalingen te voorkomen?
what must PT happen in order repetitions to prevent
(2004, TNC)
'What has to be done (in order) to prevent any repetition?'

Again, an alternative explanation is conceivable. The purpose meaning in examples like (5a) above was in fact coded redundantly. To a speaker of Middle Dutch, the syntactic status of the infinitive clause as an adjunct would have been clear without *om*, since all argument positions in the main clause are filled. And from the syntactic analysis the purpose meaning would have followed, since expressing purpose is what Middle Dutch infinitival adjuncts did. Conceivably, it was because of semantic redundancy that *om* could be reinterpreted as a semantically empty element.[1] It is not obvious, then, that the bleaching of *om* resulted from habituation through frequent use.

Haspelmath himself has a somewhat different take on the relation between frequency and bleaching. He understands bleaching not as semantic generalization but (at least at first) as a loss of pragmatic salience (1999: 1055). Haspelmath argues that novel expressions are initially coined or adopted by speakers because they are extravagant, thereby contributing to speakers' social success, but as they then gain in frequency they start losing their extravagance through habituation. The idea that speakers' desire to be noticed generally drives grammaticalization is contested (Traugott & Trousdale 2013: 125). De Smet (2012) even argues that many grammatical changes happen because they are unnoticeable and inconspicuous (see section 4.3 below). Even so, Haspelmath's inflationary cycle is perhaps likely to occur with respect to linguistic strategies that speakers often rely on to score rhetorical effect.

[1] Some will wonder why *om* was used in the first place. I would suggest because it facilitated parsing by flagging the beginning of an infinitive clause. This is particularly useful in a language like Dutch, where the infinitival verb comes in clause-final position. On that view, *om* was not recruited to mark purpose meaning (being compatible with purpose meaning sufficed), but to signal syntactic relations early on in sentence structure.

Intensifiers, for example, are known to have a rapid rate of turnover (Lorenz 2002). Witness the wavelike pattern in Figure 1, which shows the token frequencies (normalized and then standardized) of *awfully*, *terribly*, and *totally* in the last 200 years of American English (based on COHA, Davies 2010). The consecutive waves are consistent with the idea that speakers recruit relatively infrequent adverbs as intensifiers in order to boost expressiveness, and then abandon them again when they become too frequent. The most striking curve in Figure 1 is that of *totally*, which has gone through the cycle of recruitment and abandonment twice – with not only a frequency peak in the late twentieth century but also a decline in the nineteenth century following an earlier peak. That the cycle can be repeated in a single adverb suggests that the effect of frequency is indeed primarily on an item's pragmatics, not its semantics. If popularity in the eighteenth century had caused semantic bleaching, *totally* would have lost the expressiveness that motivated its recruitment as a 'new' intensifier in the twentieth century. From this, loss of pragmatic salience through entrenchment appears a real possibility, but its link to semantic generalization may be uncertain.

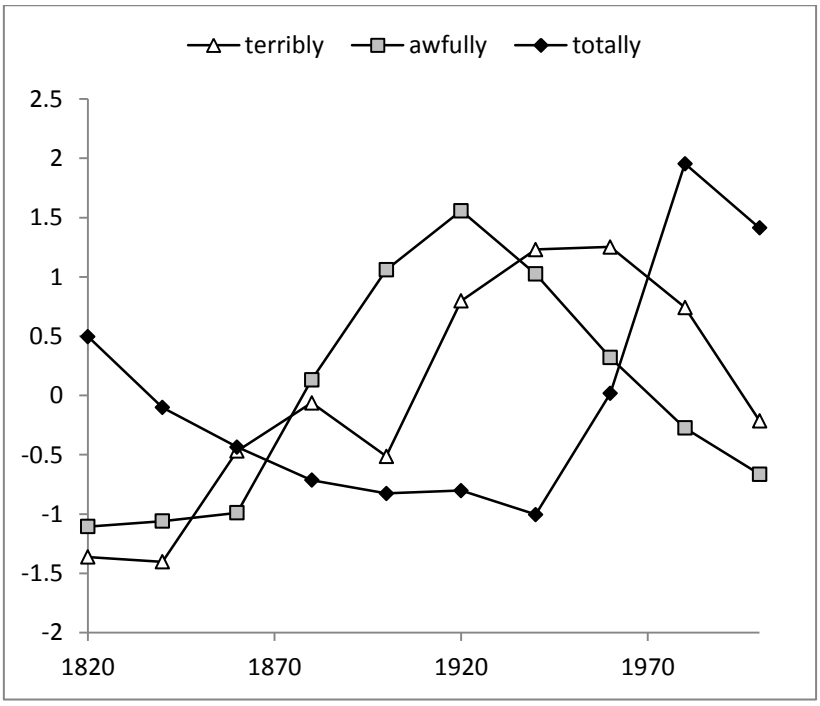

Figure 1. Normalized and standardized frequencies of *awfully*, *terribly* and *totally* in 19th and 20th-century American English (based on COHA).

3.2 *Proneness to polysemy*

The above does not really satisfy the question whether symbolic relations can change under their own entrenchment. Perhaps an affirmative answer is to be sought not in semantic generalization but

in the emergence of polysemy. There is robust synchronic evidence showing that frequent words tend to be more polysemous (Zipf 1949; xxx this volume xxx). So, from a diachronic point of view, one would want to know whether frequency causes polysemy or vice versa. In many cases this just leads to a diachronic chicken-or-egg problem, but some lexical items are of special interest, because changes in their frequency are clearly due to external events. Consider the word *tsunami*. Figure 2 shows the normalized frequency of *tsunami* in the news section of COHA between the 1990s and 2000s. Predictably, frequency increased following the 2004 Indian Ocean Tsunami – in fact, it rockets off the chart. As Figure 2 further shows, the frequency of *tsunami* also increased in contemporary fiction data, indicating that the word and concept became more available to speakers even in contexts unrelated to the Indian Ocean Tsunami. Most interestingly, the increase affected not only literal but also figurative uses of *tsunami*, both in the newspaper data and in the fiction data. Some examples of figurative uses are given in (9). This indicates that increasing entrenchment made the word more available for metaphorical extension. It is conceivable, then, that stronger entrenchment correlates with greater proneness to semantic change.

(9) a. talk of a romance between John Donlan […] and the gorgeous Maria Angelica Connors […] reported a couple of weeks ago have [sic] caused a *tsunami*. (2008, COHA)

b. The team in the Terry unit acted quickly, bringing out a stretcher and hoisting the two-hundred-and-seventy-pound former teamster onto it, then wheeling him to an area that could be screened off from other patients. But they were paddling against a medical *tsunami*. (2009, COHA)

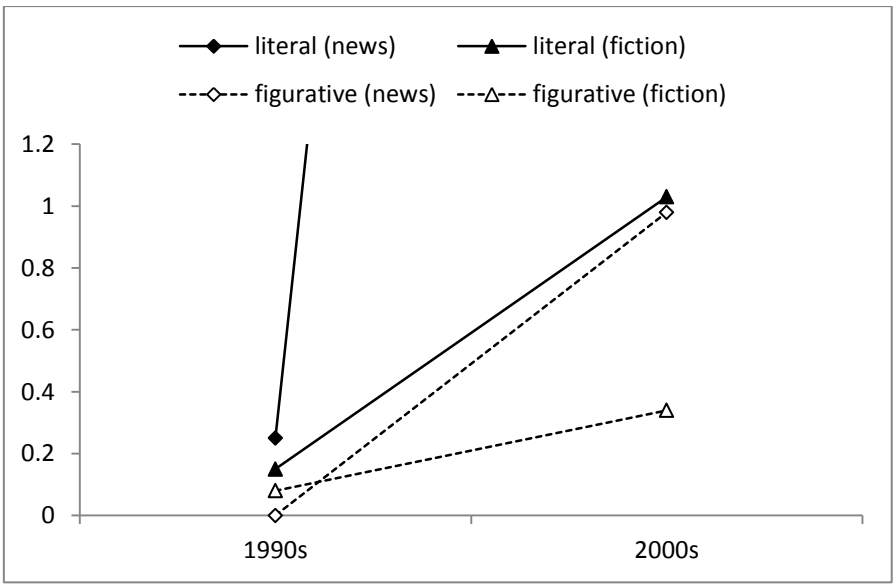

Figure 2. Normalized frequencies (per million words) of literal and figurative uses of *tsunami* in news and fiction texts from the 1990s and 2000s (based on COHA).

4 Syntagmatic association

The process by which syntagmatic relations are entrenched is often referred to as 'chunking'. That chunking happens has been established beyond reasonable doubt, on the basis of historical evidence, among other things (see also xxx this volume xxx). Even so, there are again aspects of the process that are elusive. This section addresses the historical evidence in support of chunking, and then delves into some of the areas that still deserve further exploration.

4.1 *Constructional split*

Important historical evidence of chunking comes from semantic changes that affect whole syntagmatic sequences rather than their component parts. For instance, as (10a) shows, *in spite of* originally meant 'in defiance of', which was consistent with the meaning of *spite* 'contempt'. Later, however, *in spite of* developed the meaning 'notwithstanding', as in (10b) – a change that was not paralleled by any change to *spite* (or to *in* or *of*, for that matter) (Hoffmann 2005). That the change exclusively affected *in spite of* and not its individual component parts must mean that speakers had already stored *in spite of* independently of the elements of which the phrase is made up.

(10) a. But for noy of my nobilte & my nome gret, I shuld .. spede the to spille *in spite of* þi kynge. (c1400, OED)
'Were it not for the harm to my nobility and great name, I would encourage you to kill in defiance of your king.'

b. *In spite of* his vows to stay out of trouble he always managed to find it. (1989, BNC)

Essentially the same phenomenon is seen in words whose meaning changes in a specific syntactic constellation. For instance, Ghesquière (2014: 160-176) shows that English *whole* originally meant 'intact, undivided', as in (11a-b), but developed (among other things) into a secondary determiner establishing reference to an entity in its entirety, as in (11c). As the examples show, the original meaning is found in attributive and predicative contexts of *whole* but the new meaning is exclusive to attributive contexts. So, language users must have stored attributive *whole* independently of its more general lexical entry.

(11) a. Ensure that the seeds you buy are *whole* and not split or lightly crushed. (Ghesquière 2014: 161)

b. 100g *whole* blanched almonds (Ibid.: 161)

c. there were at first not enough tablets available for the *whole* school. (Ibid.: 163)

Similar changes happen in morphology. One type of change is known as derivational split (Bybee 1985). When derivational split occurs the meaning of a derivational form is no longer fully predictable from the meanings of its base and the derivational pattern. For instance, *sheepish* ought to mean 'having the qualities of a sheep', but it is now only used meaning 'embarrassed, excessively diffident'. One might question whether this still represents a sheep-like quality. It certainly underrepresents the broad range of potential sheep-like qualities (group loyalty, woolliness, having a gentle disposition etc.). It follows that a speaker must have a separate lexical entry for *sheepish*. To use or interpret *sheepish*, a speaker cannot rely only on the meanings of *sheep* and *-ish*-suffixation alone.[2]

4.2 *Conservatism*

Chunking is further evidenced by the survival of obsolete elements in specific syntagmatic combinations. Etymological dictionaries abound with examples. Old English *ræden* 'condition', for instance, has disappeared as a noun, but survives as *-red* in Present-day English *hatred* and *kindred*. Similarly, the Middle Dutch case system has largely collapsed, but many of its forms survive into Present-day Dutch in fixed expressions, such as *te mijner verdediging* 'to my defence', which preserves dative inflection on the possessive pronoun, or Biblical *de leliën des velds* 'the lilies of the field', which retains genitive inflection on the possessor noun and its determiner. The only way such relic forms could have survived is through chunking.

The ability of chunks to conserve older material can be held responsible for the apparently erratic character of analogical levelling. Analogical levelling makes for a better form-meaning fit in the grammar of a language by wielding out irregularities, but its application is typically very inconsistent – which seems to defeat the whole point of levelling (Harris & Campbell 1995; Lass 1998). For example, the irregular English past tense form *lept* has been analogically levelled to *leaped*, in line with the regular past tense formation pattern by *-ed*-suffixation, yet the form *kept* (as opposed to **keeped*) defiantly continues to exist. Hooper (1976) accounts for this by arguing that frequent forms are more resistant to levelling. Because they are more strongly entrenched, frequent forms have a

[2] Bybee (1985) also describes inflectional split, as in French *maintenant* 'now', which used to be the present participle of *maintenir* 'hold on to'.

selectional advantage that allows them to persistently outcompete assembly of the regular alternative. Synchronically, this results in a concentration of irregularity in the most frequent forms of a language. In Present-day English, for instance, the top ten most frequent verbs are all irregular (*be*, *have*, *do*, *say*, *go*, *get*, *know*, *make*, *think*, *take*), even though irregular verbs constitute a minority overall.

What holds for morphology extends to syntax. Well-entrenched sequences can preserve old structures, against the tide of regularization. The following example comes from Harris & Campbell (1995: 104-106). In Finnish, non-finite complements of non-motion verbs are usually formed on the basis of the so-called 'first infinitive', as in *yrittää tehdä* 'try to do'. There is a class of exceptions, however, consisting of verbs that combine with the 'third infinitive', for instance *pyrkiä tekemään* 'strive to do' (instead of **pyrkiä tehdä*).[3] Normally, third infinitives combine with verbs of motion to denote a goal, as in *mennä tekemään* 'go to do'. As it turns out, the exceptional non-motion verbs with third-infinitive complements can all be traced back historically to motion verbs – *pyrkiä* 'strive', for instance, originally meant 'hurry to do'. What must have happened, then, is that a number of motion verbs, including *pyrkiä*, in combination with the third infinitive underwent semantic change and lost their motion sense. The constructions that resulted were anomalous from the perspective of synchronic grammar but withstood regularisation, at least in a number of dialects and with a number of verbs. Both the semantic developments and the subsequent resistance to regularisation can only be explained as the result of chunking.

4.3 *Supporting constructions*

Existing chunks may also act as supporting constructions to other ongoing changes (De Smet & Fischer forthc.). Innovations are more likely to succeed or proceed more quickly if they resemble an established form, even if the similarity is only superficial. For example, *as good as* first appeared as a degree modifier ‘almost, virtually’ with predicative adjectives and participles, as in (12a). Later its use extended to modifying verb phrases. Some of the first verb-modifying uses were with verbs in affirmative *do*-support constructions, as in (12b). Only later did *as good as* spread to other verb forms, as in (12c).

(12) a. and hys son fell downe be fore hym *as good as* dede. (1448, De Smet & Fischer forthc.)
‘and his son fell down before him as good as dead.’

[3] The Finnish first infinitive is formed by the addition of the suffix *-ta* / *-tä* to the stem of the verb; the third infinitive by the addition of the participle suffix *-ma* / *-mä* in combination with the illative case ending *Vn*. In the case of *tehdä* and *tekemään*, the first and third infinitive forms have undergone some further changes to the stem *tek-* that are conditioned by the suffixes added.

b. And Bellarmine does *as good as* confesse this one [...]. (1617, Ibid.)

c. for he *as good as* confesseth that we are bound to [...] (1641, Ibid.)

Why did *as good as* first extend to *do*-support contexts? Presumably, in those contexts its use was supported by already well-entrenched syntagmatic associations. For instance, *do* and *good* frequently co-occurred, as in (13a), as did the concessive adverb *as good* and infinitival verbs, as in (13b).

(13) a. one moment in hell will bee worse then all the pleasure in the world *did good* (1630, Ibid.)

b. we had *as good loose* somewhat, *as vndoe* our selues by law, and then loose that too. (1615, Ibid.)

In other words, entrenched syntagmatic associations gave *as good as* a selectional advantage in some syntactic contexts, explaining why it appeared there more readily than elsewhere. As the similarities between an innovation and its supporting constructions are typically superficial, the relation is one of partial sanction.

The opposite effect also occurs. Overt deviation from a well-entrenched syntagmatic pattern may slow down change (De Smet 2012; De Smet & Van de Velde 2013). English determiners, for instance, raise strong expectations about the following element, which will very likely be a noun, else an adjective or (exceptionally) an adjective-modifying adverb. Elements that do not readily answer to these expectations rarely find their way into positions immediately following the determiner. *As good as* is a case in point. While it functions as an adverb in some contexts, it certainly does not look like one. Consequently, even though it can modify predicative adjectives (see 12a above), it never extended its range of use to combine with attributive adjectives (De Smet & Fischer forthc.). The sequence of a determiner and what looks like a preposition (*as*) is too conspicuously deviant to sneak into the grammar. The resistance to conspicuous innovation, too, presupposes knowledge of likely syntagmatic sequences.

4.4 *Phonetic reduction and loss of compositionality*

All of the above simply presupposes that syntagmatic sequences are remembered and accessible as units. With high levels of entrenchment, however, the effects of chunking can go further. Chunks tend to undergo formal reduction, and lose their underlying compositionality (Bybee 2006, 2010). Even though these effects apply to the phonetic and syntactic levels of syntagmatic structure respec-

tively, they often go hand in hand and reinforce one another. On top of that, they interact with the kind of semantic changes discussed under 4.1 above.

Consider the recent development of an indefinite article *yí* from *yí gè* (一个) in Beijing Mandarin, as described in detail by Tao (2006). In Mandarin, the numeral *yì* 'one' with falling tone is subject to a lexically-specific tone sandhi rule: it adopts a rising tone (*yí*) when preceding another syllable with falling tone. Since the rule is applied regularly, *yì* and *yí* are in complementary distribution, and recognizable as phonologically conditioned realizations of the same numeral 'one'. In the combination *yí gè* the tone sandhi rule applies before the classifier *gè*, which is used like other classifiers to link a numeral to a noun, as in (11a). However, Tao (2006: 103) shows that as *yí gè* develops into an indefinite article, the sequence undergoes phonetic reduction. Its final vowel becomes a schwa and receives neutral tone, next the intervocalic consonant is deleted, and finally the remaining vowel sequence is simplified. The result is an indefinite article *yí*, used with rising tone regardless of the tone on the following syllable, as in (11b). As the only trace of the eroded classifier *gè*, the invariable rising tone in *yí* 'a' now formally signals the difference with the numeral *yì*/*yí* 'one'.

(11) a. *yí* *ge* rén yì wǎn shǔi (adapted from Tao 2006: 113)
one CL person one CL water
'each person (gets) one bowl of water'

b. chī *yí* táor ba (adapted from Tao 2006: 114)
eat a peach INT
'have a peach'

The emergence of invariable *yí* 'a' illustrates the interaction between reduction and loss of compositionality. On the one hand, the frequent combination *yí gè* is automated and stored as a chunk. This makes the combination vulnerable to semantic change, further obscuring its original syntax. On the other hand, it is formal reduction that consolidates the loss of compositionality, by making the component parts truly unrecognizable.

Phonetic reduction can perhaps be seen as another form of partial sanction, this time between a phonological target and its phonetic realization. However, the more specific mechanisms underlying phonetic reduction are complex and not yet fully understood (Gahl et al. 2012; Ernestus 2014). In actual speech, reduction positively correlates with speech rate. At the same time, it can be assumed that high speech rate is easier to maintain in frequent sequences, because their predictability makes them easier for speakers to plan. Together, this can explain why frequent sequences are more prone to reduction (Pluymakers et al. 2005; Ernestus 2014: 31). Down at the level of specific articulatory gestures, Bybee (2006) links reduction to fluency through practice. She proposes that practice im-

proves speakers' ability to anticipate upcoming articulations in frequent sequences, which causes articulatory overlap. Finally, in diachrony, reduction may proceed in steps, with one reduced form serving as input to the next, and with extensive synchronic variation as a result. Mandarin *yí gè*, discussed above, is a case in point. This suggests that some reduction processes depend on language users storing variant realizations, as is maintained by exemplar-based models (Bybee 2003: 40-43). However, each of the above mechanisms is open to debate. First, high speech rate does not always bring reduction (van Son & Pols 1990). Second, practice through repetition may lead to more accurate rather than overlapping articulations (Baayen xxx). Third, the synchronic evidence for storage of variant realizations is relatively weak (Ernestus 2014).

Loss of compositionality raises new questions, too. Syntactic structure is generally thought of as discrete. Something is either a head or a dependent, either one constituent or two constituents, and so on. This makes one wonder whether loss of compositionality proceeds abruptly or gradually. The alleged discreteness of syntactic structure suggests the former. But the gradient nature of entrenchment suggests the latter. There is good synchronic evidence to support the idea that compositionality is gradient, particularly in morphology (Hay & Baayen 2005), but a historical linguist would of course like to catch the process in action. To do so, one possible avenue of research is into syntactic priming effects between chunks and the syntactic structure they (used to) instantiate. Torres Cacoullos (forthc.) investigates the variation between the progressive and the simple form in Spanish, illustrated in (12a-b) respectively.

(12) a. ¿Sabes tú con quién *estás* *habla-ndo*?
know.PRS.2SG you with REL be.PRS.2SG speak-GER
(19th c., adapted from Torres Cacoullos forthc.)
'Do you know who you are talking to?'

b. Olvidas que *hablas* con un republicano?
forget.PRS.2SG COMP speak.PRS.2SG with a republican
(19th c., adapted from Torres Cacoullos forthc.)
'Do you forget that you are speaking (lit. you speak) to a republican?'

She argues that the progressive form was in origin a combination of the locative verb *estar* (from Latin *stare* 'stand') and a gerund. As the pattern grammaticalized, it came to mark progressive aspect and at the same time increased in frequency. The frequency increase had striking consequences. In her early data, Torres Cacoullos finds that the choice between the progressive and simple form is sensitive to a strong priming effect, the progressive form being favoured when another use of *estar*

precedes in the discourse, as in (13). In her later data, the effect gradually weakens. This suggests that the progressive form ceased to be associated with the other uses of *estar*.

(13) no sabemos quién *está* *dentro*; *habla-ndo* *están*.
NEG know.PRS.1PL who be.PRS.3SG inside speak-GER be.PRS.3PL
(15th c. adapted from Torres Cacoullos forthc.)
'We don't know who is inside; they are talking.'

Torres Cacoullos interprets this as evidence of a gradual change to underlying syntactic compositionality, as a result of chunking.

5 Paradigmatic association

Of the four relations discussed in this paper, paradigmatic relations are the odd one out, because they are the least tangible. To the analyst, it is easy enough to conceive of paradigmatic relations. The question is whether they get entrenched as units in language users' minds (for a critical answer, see Croft 2001). If they do, it is as probabilistic second- or even third-order generalizations. Take word classes as an example. If language users can group words into a word class, they must do so on the basis of similar meanings and similar[4] distributions over syntagmatic contexts. This means that the word class only emerges by virtue of prior knowledge of the symbolic and syntagmatic relations maintained by its members. The word class is entrenched as a unit to the extent that it is emancipated from that prior knowledge. What traditional grammar calls a word class, then, is a distributional regularity that exists *sui generis*. The behaviour of its members is predictable directly from their class membership, requiring no assessment of their similarities to other members.

That paradigmatic relations can get entrenched as units may seem plausible but it is difficult to prove. It is therefore somewhat troubling that within the usage-based literature the issue has so far received little attention (see Cappelle 2006 for discussion). From a diachronic point of view, the changes of interest are especially those that see an item extend its range of use to new syntagmatic contexts. To stick with word classes, consider the kind of change described by Denison (2001) and Van Goethem & De Smet (2014). In noun-noun sequences, the qualifying noun can be reinterpreted as an adjective. For instance, French *géant* 'giant' can still be read as a noun in a noun-noun com-

[4] Croft (2001) convincingly shows that word class membership on the basis of *identical* distributions is impossible to maintain, because it either requires arbitrary selection of 'relevant' distributional contexts or else leads to an uncontrollable proliferation of word classes.

pound in (14a), but it behaves as an attributive adjective in (14b) and as a predicative adjective in (14c).

(14) a. un calmar *géant* de 9 mètres et de 180 kilogrammes
'a giant squid 9 metres long and 180 kilograms'
b. une ville *géante* et contrastée
'a gigantic and diverse city'
c. le lit était *géant* et super confortable
'the bed was huge and super comfortable'

Invariably, there is more than one way to account for such a change. Is *géant* first reclassified as an adjective and does its new behaviour follow from its new class membership? Or is it simply attracted to new constructions because they are open to other words that denote a similar meaning and have an overlapping distribution? The former account involves automatic reliance on the distributional predictions of an entrenched paradigm; the latter requires active comparison over semantically and distributionally similar elements. As for *géant*, I believe the issue is impossible to resolve. However, in what follows, I turn to some cases that show paradigms do affect language change. All examples involve formal alternations that appear to have become automated and so must have unit status.[5]

5.1 *Paradigmatic analogy*

Sometimes language users identify an alternation between two forms in some contexts, and then extend the alternation into contexts that previously only allowed one of the forms. De Smet (2013) labels this process paradigmatic analogy. A particularly elegant example is found in Aalberse (2007: 140-1). Aalberse argues that in the verbal paradigms of some Dutch dialects the *-en*-endings of the plural could extend to the first person singular. This happened because the dialects had a tendency for *-n*-deletion, leading to variation between *-en* and *-e* in the plural. The variation then spread to the first person singular, where *-e* is the original form. If, eventually, the *-en*-ending won out, the singular too became exclusively *-en*-marked. The logic underlying the crucial extensional step – Stage III in the diagram below – is that "if the two forms *-e* and *-en* are alternates in the plural, it is possible that the language users assume that *-e* and *-en* are alternates in the full paradigm" (Aalberse 2007: 141). In

[5] For reasons of space, the overview is incomplete. Other types of change that depend on automated second-order generalizations might include calquing (Heine & Kuteva 2006), the grammaticalization of zero (Bybee 1994), the stacking of inflectional endings to create new morphological tenses or cases (Kiparsky 2011: 17), and even semantic changes sanctioned by conceptual metaphors (Lakoff & Johnson 1980).

other words, once an alternation pattern is entrenched, the presence of one alternate (*-e*) in a context sanctions the other (*-en*) in the same context.

	Stage I	Stage II	Stage III	Stage IV
Singular	*klopp-e*	*klopp-e*	*klopp-e/-en*	*klopp-en*
Plural	*klopp-en*	*klopp-e/-en*	*klopp-e/-en*	*klopp-en*

Figure 3. Paradigmatic analogy in the inflection of (dialectal) Dutch *kloppen* 'knock'.

Paradigmatic analogy can take the appearance of a constraint on change. For example, De Smet (2013) describes how subject-controlled gerund complements as in (15) over time spread to an ever-growing number of matrix verbs, including *love* (13th century), *hate* (14th century), *forbear*, *escape* (15th century), *fear*, *avoid* (16th century), *miss*, *omit*, *prefer*, *propose* (17th century), *remember*, *mind*, *regret*, *enjoy*, *risk* (18th century), *suggest*, *try* (19th century), *admit*, *consider*, *resent* (20th century), and so on.

(15) a. The cat loves *being stroked*, absolutely loves it! (BNC)

b. Downey admitted *shouting* but said it was on the spur of the moment (BNC)

What is striking in this is that despite the obvious success of gerund complements, they almost[6] never extended beyond the distribution of noun phrases. Accordingly, all of the verbs listed above are transitive verbs. There is no general restriction on intransitive verbs taking complement clauses (e.g. intransitive *long* takes *to*-infinitival complements as in *She longed to know what he was thinking*; intransitive *laugh* takes *that*-complements, as in *He laughed that now he knew why they wore rubber boots*; etc.). Therefore, the specific ban on gerund complements with intransitive verbs indicates that the distribution of gerunds is determined by a strongly entrenched paradigmatic tie to noun phrases. Knowing that gerunds historically developed from deverbal nouns (Fanego 2004), the tie is perhaps not completely surprising. Even so, its existence calls into question the idea that "the classification of subordinate clauses as nominal, adjectival, or adverbial is a feature of traditional grammar that should be discarded" (Huddleston & Pullum 2002: 1017). A paradigmatic association between gerunds and noun phrases constrained change to gerunds over several centuries.

5.2 *Suppletion*

[6] De Smet (2010, 2014) shows that there exists a handful of exceptions, but in each case these are due to other developments interfering with the extension of gerund complements.

In suppletion, inflectional forms of historically unrelated words come to function as forms of a single word. While such a change is decidedly curious, it is not that uncommon, particularly in high-frequency words (Corbett 2007). In English, the lexeme GO comprises two historically distinct roots, one supplying the past form *went*, the other supplying the remaining forms *go*, *goes*, *going*, *gone*. In Middle English, these roots still represented roughly synonymous but distinct verbs, each with a full inflectional paradigm. Similarly, the lexemes GOOD and BAD have suppletive comparatives and superlatives *better–best* and *worse–worst*. The lexemes ONE and TWO have suppletive ordinal forms *first* and *second*. The present-day lexeme BE is even made up of three historically distinct roots supplying the forms (i) *am*, *is*, *are*, (ii) *was*, *were* and (iii) *be*, *being*, *been* – and in Old English yet another root *sind-* was in use for present plural forms. The first person pronoun I has the suppletive oblique and possessive forms *me*/*my*; and two more suppletive roots in the plural forms: *we* for nominative and *us*/*our* for oblique and possessive.

Suppletion testifies to the role of paradigmatic relations twice. First, suppletive pairs often fit recurrent alternations in the language (Hippisley et al. 2004; Petré 2014).[7] For example, the two suppletive series *good–better–best* and *bad–worse–worst* mirror the morphological distinction positive–comparative–superlative that is marked by means of suffixation for other monosyllabic adjectives in English: *fine–finer–finest*, *old–older–oldest*, and so on. In other words, in suppletion, the relation between what were historically distinct words is reorganized in terms of regular alternations available in the grammar. If an existing alternation can serve as a template for change, it must have unit status.

Second, cases of suppletion whose history is recorded show that the starting point for suppletion is typically competition (Corbett 2007; Petré 2014). Often one or both of the lexemes involved is defective from the start (e.g. *second* is a French loan deriving from a verb 'follow' and did not have a cardinal alternate to begin with). But where their distributions overlap, the competing lexemes eventually become fully interchangeable. It is this stage of interchangeability of forms that marks the emergence of an automated paradigmatic relation. The true suppletive relation only arises as a next step, as the competition is resolved in favour of different forms in different contexts (e.g. English *beon* 'be' survived in the infinitive and participles but was ousted elsewhere). But the prior shift from lexical (near-)synonymy to lexical identity is crucial, turning an incidental alternation into a fully systematic and consistent one. This marks the point at which an alternation must have achieved unit status.

[7] Note though that there is a danger of circularity here, since suppletive relations that do not fit regular alternations may not be recognized as cases of suppletion, either because of the definition of suppletion, or because they are simply harder to spot. A possible example that does not fit regular alternation patterns is the relation between English *will* and *shall* (Arnovick 1990).

5.3 *Hypercorrection*

Hypercorrection resembles paradigmatic analogy but extends across language varieties. It typically happens when a speaker adopts a variety that is not their own – e.g. a prestige dialect – and identifies a (near-)systematic correspondence between two variants, one associated with the speaker's vernacular and one associated with the other variety. Hypercorrection takes place when the alternation is overextended, with the more prestigious variant being used in contexts it never occurs in in the target variety. The phenomenon presupposes that speakers have learned an alternation and that they apply it more or less automatically, particularly where their knowledge of actual syntagmatic sequences fails. As such, it must involve a paradigmatic association with unit status.

For example, northern varieties of English have the /ʊ/ vowel in words where the more prestigious standard variety has either /ʊ/ (as in *foot*, *good* or *could*) or /ʌ/ (as in *hut, love* or *sun*). Consequently, Northern speakers insert /ʌ/ pronunciations when shifting to the standard variety but in doing so they may hypercorrect and pronounce words like *could* as /kʌd/ instead of /kʊd/ (Chambers & Trudgill 1980). The mistakes prove that such speakers lack accurate knowledge of the actual phonological sequences containing /ʌ/ in the target variety. To complement failing knowledge, they rely on the stylistically polarized alternation between /ʊ/ and /ʌ/.

As an example of hypercorrection in grammar, consider the case described by Flikeid (1992). She studies the third person plural forms in Acadian French communities. These are small rural communities in Nova Scotia, largely isolated from one another and from the rest of the French-speaking world. The vernacular Acadian third person plural indicative forms end in *-ont* /ɔ̃/, e.g. /partɔ̃/ '(they) leave', contrasting with normative French third person plural forms, which end in orthographic *-ent,* phonologically zero, e.g. /part/ '(they) leave'. Given this situation, the normative forms can usually be derived from the vernacular forms by truncation. However, where either the vernacular or the normative form is irregular, speakers may create a hypercorrect third form by overapplying the truncation rule. For instance, the vernacular third person indicative plural for *croire* /krwar/ 'believe' is irregular /krwajɔ̃/, giving rise to hypercorrect /krwaj/ as opposed to normative French /krwa/. Similarly, the vernacular third person plural indicative for *aller* /ale/ 'go' is /alɔ̃/, leading to hypercorrect /al/ where in fact normative French has irregular /vɔ̃/.

Interestingly, while hypercorrect forms like /krwaj/ or /al/ occur only sporadically most of the time, Flikeid (1992) finds one community where some hypercorrect forms have become part of the community repertoire. The forms are highly frequent, much more so than in other communities, indicating that they are likely to have been socially transmitted, in addition to being analogically generated. This at once reveals the elusiveness of hypercorrections and paradigmatic generalizations in general. While hypercorrection relies on automated paradigmatic relations, its output may always go

on to lead a life of its own, as a stored chunk (see 4 above). In the same vein, apparent cases of hypercorrection may in fact be or have become functionally constrained (e.g. Labov & Harris 1986: 13-17; Bullock et al. 2014).[8] At that point, their occurrence no longer depends on automatic substitution of a vernacular form for a more prestigious form.

6 Conclusions

Theorizing about language use tends to assume a tension between replication and creativity, storage and assembly. From a synchronic point of view, entrenchment would appear to sit on the replication side of usage. Perhaps the main contribution of historical linguistics is in revealing the paradoxes inherent in this contrast. Judging from its role in change, entrenchment is involved in much that is new in usage. It crucially underlies not only what is replicated but also what is newly created. In various ways, it is involved in the emergence of new forms, new meanings, new structures, and new structural oppositions.

At the same time, the role of entrenchment effects in language change leads to new questions and challenges. The exact mechanisms at work in many of the changes linked to entrenchment are still unclear. Bleaching and phonetic reduction, for instance, are among the effects of entrenchment most commonly cited, but neither process is at present fully understood. On top of that, the changes linked to entrenchment lead back to some of the major problem areas in linguistic theory, such as the boundaries between meaning and context, or the nature of abstract syntactic relations in and across constructions. The concept of entrenchment promises a model of language that looks coherent in its outline and that may come to have real explanatory power in its application. But it is certainly a model that is still incomplete.

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[8] Lass (1998) would refer to these as 'exaptations'.

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